Table C.3-1. Estimated radiological impacts during construction activities to involved workers by project.

Project	Description	Workers per year	Total workers	Average annual radiation dose (millirem per year)	Processing time (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increase in latent cancer fatalities
No Action Alternative								
P1D	No Action Alternative	0	0	0	0	0	0	0
P1E	Bin Set 1 Calcine Transfer	21	110	690	5	15	73	0.03
P4	Long-Term Storage of Calcine in Bin Sets	0	0	0	0	0	0	0
P18MC	Remote Analytical Laboratory Operations	0	0	0	0	0	0	0
Totals		21	110	NA[a]	NA	15	73	0.03
Continued Current Operations Alternative								
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	0	0	0	0	0	0	0
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Management	0	0	0	0	0	0	0
P1E	Bin Set 1 Calcine Transfer	21	110	690	5	15	73	0.03
P4	Long-Term Storage of Calcine in Bin Sets	0	0	0	0	0	0	0
P18MC	Remote Analytical Laboratory Operations	0	0	0	0	0	0	0
P112E	Shipping Transuranic Waste from INTEC to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
Totals		21	110	NA	NA	15	73	0.03
Full Separations Option								
P59A	Calcine Retrieval and Transport	90	450	250	5	23	110	0.05
P9A	Full Separations	0	0	0	0	0	0	0
P9B	Vitrification Plant	0	0	0	0	0	0	0
P9C	Class A Grout Plant	0	0	0	0	0	0	0
P24	Vitrified Product Interim Storage	0	0	0	0	0	0	0
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	0	0	0	0	0	0	0
P25B	Shipping HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P18	New Analytical Laboratory	0	0	0	0	0	0	0
P118	Separations Organic Incinerator	0	0	0	0	0	0	0
P133	Waste Treatment Pilot Plant	0	0	0	0	0	0	0

Table C.3-1. Estimated radiological impacts during construction activities to involved workers by project (continued).

Project	Description	Workers per year	Total workers	Average annual radiation dose (millirem per year)	Processing time (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increase in latent cancer fatalities
P35D	Class A Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	0	0	0	0	0	0	0
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	6	42	190	7	1.1	8.0	0
Totals		96	490	NA	NA	24	120	0.05
	Planning Basis Option							
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	0	0	0	0	0	0	0
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Management	0	0	0	0	0	0	0
P59A	Calcine Retrieval and Transport	90	450	250	5	23	110	0.05
P23A	Full Separations	0	0	0	0	0	0	0
P23B	Vitrification Plant	0	0	0	0	0	0	0
P23C	Class A Grout Plant	0	0	0	0	0	0	0
P24	Interim Storage of Vitrified Waste	0	0	0	0	0	0	0
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	0	0	0	0	0	0	0
P25B	Shipping HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P18	New Analytical Laboratory	0	0	0	0	0	0	0
P118	Separations Organic Incinerator	0	0	0	0	0	0	0
P133	Waste Treatment Pilot Plant	0	0	0	0	0	0	0
P35D	Class A Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	0	0	0	0	0	0	0
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	6	42	190	7	1.1	8.0	0
Totals		96	490	NA	NA	24	120	0.05
	Transuranic Separations Option							
P59A	Calcine Retrieval and Transport	90	450	250	5	23	110	0.05
P49A	Transuranic/Class C Separations	0	0	0	0	0	0	0
P49C	Class C Grout Plant	0	0	0	0	0	0	0
P39B	Shipping Transuranic Waste at INTEC for Shipment to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0

Table C.3-1. Estimated radiological impacts during construction activities to involved workers by project (continued).

Project	Description	Workers per year	Total workers	Average annual radiation dose (millirem per year)	Processing time (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increase in latent cancer fatalities
P39A	Shipping Transuranic Waste from INTEC to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
P18	New Analytical Laboratory	0	0	0	0	0	0	0
P118	Separations Organic Incinerator	0	0	0	0	0	0	0
P133	Waste Treatment Pilot Plant	0	0	0	0	0	0	0
P49D	Class C Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	0	0	0	0	0	0	0
P27	Class C Grout Disposal in a Low-Activity Waste Disposal Facility	6	42	190	7	1.1	8.0	0
Totals		96	490	NA	NA	24	120	0.05
	Hot Isostatic Pressed Waste Option							
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	0	0	0	0	0	0	0
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	0	0	0	0	0	0	0
P18	New Analytical Laboratory	0	0	0	0	0	0	0
P59A	Calcine Retrieval and Transport	90	450	250	5	22	110	0.05
P71	Mixing and Hot Isostatic Pressing	0	0	0	0	0	0	0
P72	Interim Storage of Hot Isostatic Pressed Waste	0	0	0	0	0	0	0
P73A	Packaging and Loading Hot Isostatic Pressed Waste at INTEC for Shipment to a Geologic Repository	0	0	0	0	0	0	0
P73B	Shipping Hot Isostatic Pressed Waste from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P112E	Shipping TRU from INTEC to Waste Isolation Pilot Plant	0	0	0	0	0	0	0
P133	Waste Treatment Pilot Plant	0	0	0	0	0	0	0
Totals		90	450	NA	NA	22	110	0.05
	Direct Cement Waste Option							
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	0	0	0	0	0	0	0
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Management	0	0	0	0	0	0	0
P18	New Analytical Laboratory	0	0	0	0	0	0	0

Table C.3-1. Estimated radiological impacts during construction activities to involved workers by project (continued).

Project	Description	Workers per year	Total workers	Average annual radiation dose (millirem per year)	Processing time (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increase in latent cancer fatalities
P59A	Calcine Retrieval and Transport	90	450	250	5	22	110	0.05
P80	Direct Cement Process	0	0	0	0	0	0	0
P81	Unseparated Cementitious HLW Interim Storage	0	0	0	0	0	0	0
P83A	Packaging and Loading Cementitious Waste at INTEC for Shipment to a Geologic Repository	0	0	0	0	0	0	0
P83B	Shipping Cementitious Waste from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P112E	Shipping Transuranic Waste from INTEC to Waste Isolation Pilot Plant	0	0	0	0	0	0	0
P133	Waste Treatment Pilot Plant	0	0	0	0	0	0	0
Totals		90	450	NA	NA	22	110	0.05
	Early Vitrification Option							
P1C	Process Equipment Waste Evaporator and Liquid Effluent Treatment and Disposal Facility	0	0	0	0	0	0	0
P18	New Analytical Laboratory	0	0	0	0	0	0	0
P59A	Calcine Retrieval and Transport	90	450	250	5	22	110	0.05
P61	Vitrified HLW Interim Storage	0	0	0	0	0	0	0
P62A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	0	0	0	0	0	0	0
P63A	Shipping of Vitrified HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P88	Early Vitrification with Maximum Achievable Control Technology	0	0	0	0	0	0	0
P90A	Packaging and Loading Vitrified SBW at INTEC for Shipment to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
P90B	Shipping of Vitrified SBW from INTEC to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
P133	Waste Treatment Pilot Plant	0	0	0	0	0	0	0
Totals		90	450	NA	NA	22	110	0.05

Table C.3-1. Estimated radiological impacts during construction activities to involved workers by project (continued).

Project	Description	Workers per year	Total workers	Average annual radiation dose (millirem per year)	Processing time (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increase in latent cancer fatalities
Minimum INEEL Processing Alternative								
P1C	Process Equipment Waste Evaporator and Liquid Effluent Treatment and Disposal Facility	0	0	0	0	0	0	0
P18	New Analytical Laboratory	0	0	0	0	0	0	0
P24	Interim Storage of Vitrified Waste	0	0	0	0	0	0	0
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	0	0	0	0	0	0	0
P25B	Shipping HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	6	42	190	7	1.1	8.0	0
P64D	Transport of the Vitrified Waste to INEEL	0	0	0	0	0	0	0
P111	SBW and Newly-Generated Liquid Waste Treatment with Cesium Ion Exchange to Contact-Handled Transuranic Grout and Low-Level Waste Grout	0	0	0	0	0	0	0
P112B	Transport Contac-Handled Transuranic Waste to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
P133	Waste Treatment Pilot Plant	0	0	0	0	0	0	0
P59A	Calcine Retrieval and Transport	90	450	250	5	22	110	0.05
P117A	Calcine Packaging and Loading to Hanford	0	0	0	0	0	0	0
P121A	Calcine Transport to Hanford	0	0	0	0	0	0	0
Totals		96	490	NA	NA	22	120	0.05

a. NA = not applicable.

Table C.3-2. Estimated radiological impacts during operations to involved workers by project.

Project		Number workers/year	Number workers	Average annual worker rad dose (millirem per year)	Processing times (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increases in latent cancer fatalities
No Action Alternative								
P1D	No Action Alternative	42	710	190	17	8.0	140	0.05
		15	260	190	17	2.9	48	0.02
P1E	Bin Set 1 Calcine Transfer	17	290	190	17	3.2	55	0.02
P4	Long-Term Storage of Calcine in Bin Sets	0	0	190	81	0	0	0
P18MC	Remote Analytical Laboratory Operations	45	1.3×10^3	190	29	8.6	250	0.10
Totals		120	2.6×10^3	NA[a]	NA	23	490	0.19
Continued Current Operations Alternative								
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	96	580	190	6	18	110	0.04
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	60	1.3×10^3	190	21	11	240	0.10
P1B (II)[b]	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	40	840	190	21	7.6	160	0.06
P1E	Bin Set 1 Calcine Transfer	17	17	190	1	3.2	3.2	0
P4	Long-Term Storage of Calcine in Bin Sets	0	0	190	81	0	0	0
P18MC	Remote Analytical Laboratory Operations	45	1.3×10^3	190	29	8.6	250	0.10
Totals		260	4.0×10^3	NA	NA	49	760	0.30
Full Separations Option								
P9A	Full Separations	30	630	190	21	5.7	120	0.05
P9B	Vitrification Plant	40	720	190	18	7.6	140	0.05
P9C	Class A Grout Plant	16	340	190	21	3.0	64	0.03
P18	New Analytical Laboratory	95	3.2×10^3	190	34	18	610	0.25
P24	Vitrified Product Interim Storage	5	240	190	47	0.95	45	0.02
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	6	120	190	20	1.1	23	0.01
P25B	Shipping HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P59A	Calcine Retrieval and Transport	10	210	190	21	1.9	40	0.02
P118	Separations Organic Incinerator	2	42	190	21	0.38	8.0	0

Table C.3-2. Estimated radiological impacts during operations to involved workers by project (continued).

Project		Number workers/year	Number workers	Average annual worker rad dose (millirem per year)	Processing times (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increases in latent cancer fatalities
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	2.5	53	190	21	0.48	10	0
P35D	Class A Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	8	170	190	21	1.5	32	0.01
Totals		210	5.7×10^3	NA	NA	41	1.1×10^3	0.44
				Planning Basis Option				
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	96	580	190	6	18	110	0.04
P1B	Newly Generated Liquid Waste and Tank Farm Heel Waste Management	60	1.3×10^3	190	21	11	240	0.10
P1B(11)[b]	Newly Generated Liquid Waste and Tank Farm Heel Waste Management	40	840	190	21	7.6	160	0.06
P59A	Calcine Retrieval and Transport	10	210	190	21	1.9	40	0.02
P23A	Full Separations	30	480	190	16	5.7	91	0.04
P23B	Vitrification Plant	40	600	190	15	7.6	110	0.05
P23C	Class A Grout Plant	16	260	190	16	3.0	49	0.02
P24	Interim Storage of Vitrified Waste	5	240	190	47	0.95	45	0.02
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	6	120	190	20	1.1	23	0.01
P25B	Shipping HLW from INTEC to a Geological Repository	0	0	0	0	0	0	0
P18	New Analytical Laboratory	95	3.2×10^3	190	34	18	610	0.25
P118	Separations Organic Incinerator	2	32	190	16	0.38	6.1	0
P35D	Class A Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	8	180	190	23	1.5	35	0.01
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	2.5	53	190	21	0.48	10	0
Totals		410	8.1×10^3	NA	NA	80	1.5×10^3	0.61
				Transuranic Separations Option				
P18	New Analytical Laboratory	95	3.2×10^3	190	34	18	610	0.25
P39A	Shipping Transuranic Waste from INTEC to the Waste Isolation Pilot Plant	2.5	48	190	19	0.48	9.0	0

Table C.3-2. Estimated radiological impacts during operations to involved workers by project (continued).

Project		Number workers/year	Number workers	Average annual worker rad dose (millirem per year)	Processing times (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increases in latent cancer fatalities
P39B	Shipping Transuranic Waste at INTEC for Shipment to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
P49A	Transuranic/Class C Separations	50	1.1×10^{3}	190	21	9.5	200	0.08
P49C	Class C Grout Plant	16	340	190	21	3.0	64	0.03
P59A	Calcine Retrieval and Transport	10	210	190	21	1.9	40	0.02
P118	Separations Organic Incinerator	2	42	190	21	0.38	8.0	0
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	2.5	53	190	21	0.48	10.0	0
P49D	Class C Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	8.5	180	190	21	1.6	34	0.01
Totals		190	5.1×10^{3}	NA	NA	35	980	0.39
	Hot Isostatic Pressed Waste Option							
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	96	580	190	6	18	110	0.04
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	60	1.3×10^{3}	190	21	11	240	0.10
P1B (II)	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	40	840	190	21	7.6	160	0.06
P18	New Analytical Laboratory	95	3.2×10^{3}	190	34	18	610	0.25
P59A	Calcine Retrieval and Transport	10	210	190	21	1.9	40	0.02
P71	Mixing and Hot Isostatic Pressing	22	460	190	21	4.2	88	0.04
P72	Interim Storage of Hot Isostatic Pressed Waste	2.5	140	190	54	0.48	26	0.01
P73A	Packaging and Loading Hot Isostatic Pressed Waste at INTEC for Shipment to a Geologic Repository	2.5	50	190	20	0.48	9.5	0
P73B	Shipping Hot Isostatic Pressed Waste from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P112E	Shipping Transuranic Waste from INTEC to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
Totals		330	6.8×10^{3}	NA	NA	62	1.3×10^{3}	0.51
	Direct Cement Waste Option							
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	96	580	190	6	18	110	0.04
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	60	1.3×10^{3}	190	21	11	240	0.10

Table C.3-2. Estimated radiological impacts during operations to involved workers by project (continued).

Project		Number workers/year	Number workers	Average annual worker rad dose (millirem per year)	Processing times (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increases in latent cancer fatalities
P1B (II)	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	40	840	190	21	7.6	160	0.06
P18	New Analytical Laboratory	95	3.2×10^3	190	34	18	610	0.25
P59A	Calcine Retrieval and Transport	10	210	190	21	1.9	40	0.02
P80	Direct Cement Process	93	2.0×10^3	190	21	18	370	0.15
P81	Unseparated Cementitious HLW Interim Storage	4.5	240	190	54	0.86	46	0.02
P83A	Packaging and Loading Cementitious Waste at INTEC for Shipment to a Geologic Repository	2.5	50	190	20	0.48	9.5	0
P83B	Shipping Cementitious Waste from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P112E	Shipping Transuranic Waste from INTEC to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
Totals		400	8.4×10^3	NA	NA	76	1.6×10^3	0.64
				Early Vitrification Option				
P1C	Process Equipment Waste Evaporator and Liquid Effluent Treatment and Disposal	28	1.0×10^3	190	36	5.3	190	0.08
P18	New Analytical Laboratory	95	3.3×10^3	190	34	18	610	0.25
P59A	Calcine Retrieval and Transport	10	210	190	21	1.9	40	0.02
P61	Vitrified HLW Interim Storage	4.5	240	190	54	0.86	46	0.02
P62A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	2.5	50	190	20	0.48	9.5	0
P63A	Shipping of Vitrified HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P88	Early Vitrification with Maximum Achievable Control Technology	39	820	190	21	7.4	160	0.06
P90A	Packaging and Loading Vitrified SBW at INTEC for Shipment to the Waste Isolation Pilot Plant	2.5	45	190	18	0.48	8.6	0
P90B	Shipping of Vitrified SBW from INTEC to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0
Totals		180	5.6×10^3	NA	NA	34	870	0.35

Table C.3-2. Estimated radiological impacts during operations to involved workers by project (continued).

Project		Number workers/year	Number workers	Average annual worker rad dose (millirem per year)	Processing times (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increases in latent cancer fatalities
Minimum INEEL Processing Alternative								
P1C	Process Equipment Waste Evaporator and Liquid Effluent Treatment and Disposal	28	730	190	26	5.3	140	0.06
P18	New Analytical Laboratory	95	3.2×10^{3}	190	34	18	610	0.25
P24	Interim Storage of Vitrified Waste	5	240	190	47	0.95	45	0.02
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	6	120	190	20	1.1	23	0.01
P25B	Shipping HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	2.5	53	190	21	0.48	10	0
P64D	Transport of the Vitrified Waste to INEEL	0	0	0	0	0	0	0
P111A	SBW and Newly-Generated Liquid Waste Treatment with Cesium Ion Exchange to Contact-Handled Transuranic Grout and Low-Level Waste Grout	33	170	190	5	6.3	31	0.01
P111B	SBW and Newly-Generated Liquid Waste Treatment with Cesium Ion Exchange to Contact-Handled Transuranic Grout and Low-Level Waste Grout	15	230	190	15	2.9	43	0.02
P112A	Packaging and Loading Contact-Handled Transuranic (from SBW and Newly-Generated Liquid Waste Cesium Ion Exchange Grout Treatment) for Shipment to WIPP	2.5	38	190	15	0.48	7.1	0
P112B	Transport Contact-Handled Transuranic Waste to the Waste Isolation Pilot Plant	0	0	0	0	0	0	0

Table C.3-2. Estimated radiological impacts during operations to involved workers by project (continued).

Project		Number workers/year	Number workers	Average annual worker rad dose (millirem per year)	Processing times (years)	Annual collective dose (person-rem per year)	Total collective dose (person-rem)	Estimated increases in latent cancer fatalities
P59A	Calcine Retrieval and Transport	10	140	190	14	1.9	27	0.01
P117A	Calcine Packaging and Loading to Hanford	44	620	190	14	8.4	120	0.05
P121A	Calcine Transport to Hanford	NA						0
Totals		240	5.5×10^3	NA	NA	46	1.1×10^3	0.42

a. NA = not applicable.
b. Project data from project data sheets are divided into two phases.

Table C.3.4. Estimated worker injury impacts during construction activities of new facilities at INEEL by alternative.

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
No Action Alternative								
P1D	No Action Alternative	0	0	0	0	0	0	0
P1E	Bin Set 1 Calcine Transfer	21	6.6	0.80	5	100	33	4.0
Totals		21	6.6	0.80	NA	100	33	4.0
Continued Current Operations Alternative								
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	48	15	1.8	4	190	61	7.3
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	20	6.3	0.76	4	80	25	3.0
P1E	Bin Set 1 Calcine Transfer	18	5.7	0.68	5	90	29	3.4
Totals		86	27	3.3	NA	360	120	14
Full Separations Option								
P9A	Full Separations	300	95	11	5	1.5×10^3	480	57
P9B	Vitrification Plant	280	88	11	5	1.4×10^3	440	53
P9C	Class A Grout Plant	160	49	5.9	5	780	250	29
P18	New Analytical Laboratory	59	19	2.2	2	120	37	4.5
P24	Interim Storage of Vitrified Waste	110	35	4.2	3.7	410	130	16
P59A	Calcine Retrieval and Transport	190	60	7.2	5	950	300	36
P118	Separations Organic Incinerator	10	3.2	0.38	3.3	33	10	1.3
P133	Waste Treatment Pilot Plant	63	20	2.4	4	250	80	9.6
Totals		1.2×10^3	370	44	NA	5.4×10^3	1.7×10^3	200
Planning Basis Option								
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	48	15	1.8	4	190	61	7.3
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	20	6.3	0.76	6	120	38	4.6
P59A	Calcine Retrieval and Transport	190	60	7.2	5	950	300	36
P23A	Full Separations	300	95	11	5	1.5×10^3	480	57
P23B	Vitrification Plant	280	88	11	5	1.4×10^3	440	53
P23C	Class A Grout Plant	160	49	5.9	5	780	250	29
P24	Interim Storage of Vitrified Waste	110	35	4.2	3.7	410	130	16
P18	New Analytical Laboratory	59	19	2.2	2	120	38	4.5
P118	Separations Organic Incinerator	10	3.2	0.38	3.3	33	10	1.3
P35D	Class A Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	22	6.9	0.82	4.2	91	29	3.5
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	78	24	3.0	7	550	170	21
P133	Waste Treatment Pilot Plant	63	20	2.4	4	250	80	9.6
Totals		1.3×10^3	420	51	NA	6.4×10^3	2.0×10^3	240

Table C.3-4. Estimated worker injury impacts during construction activities of new facilities at INEEL by alternative (continued).

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
Transuranic Separations Option								
P18	New Analytical Laboratory	59	19	2.2	2	120	38	4.5
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	78	25	3.0	7	550	170	21
P49A	Transuranic Waste /Class C Separations	300	94	11	5	1.5×10^3	470	57
P49C	Class C Grout Plant	200	63	7.6	5	1.0×10^3	320	38
P49D	Class C Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	22	6.9	0.82	4.2	91	29	3.5
P59A	Calcine Retrieval and Transport	190	60	7.2	5	950	300	36
P118	Separations Organic Incinerator	10	3.2	0.38	3.3	33	10	1.3
P133	Waste Treatment Pilot Plant	63	20	2.4	4	250	80	9.6
Totals		920	290	35	NA	4.5×10^3	1.4×10^3	170
Hot Isostatic Pressed Waste Option								
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	48	15	1.8	4	190	61	7.3
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	20	6.3	0.76	4	80	25	3.0
P18	New Analytical Laboratory	59	19	2.2	2	120	38	4.5
P59A	Calcine Retrieval and Transport	190	60	7.2	5	950	300	36
P71	Mixing and Hot Isostatic Pressing	100	32	3.8	4	400	130	15
P72	Interim Storage of Hot Isostatic Pressed Waste	92	29	3.5	3	280	88	10
P133	Waste Treatment Pilot Plant	63	20	2.4	4	250	80	9.6
Totals		570	180	22	NA	2.3×10^3	720	86
Direct Cement Waste Option								
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	48	15	1.8	4	190	61	7.3
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	20	6.3	0.76	4	80	25	3.0
P18	New Analytical Laboratory	59	19	2.2	2	120	38	4.5
P59A	Calcine Retrieval and Transport	190	60	7.2	5	950	300	36
P80	Direct Cement Process	130	42	5.1	4	540	170	20
P133	Waste Treatment Pilot Plant	63	20	2.4	4	250	80	9.6
Total		510	160	20	NA	2.1×10^3	680	81

Table C.3-4. Estimated worker injury impacts during construction activities of new facilities at INEEL by alternative (continued).

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
Early Vitrification Option								
P18	New Analytical Laboratory	59	19	2.2	2	120	38	4.5
P59A	Calcine Retrieval and Transport	190	60	7.2	5	950	300	36
P61	Vitrified HLW Interim Storage	110	36	4.3	4	460	150	17
P88	Early Vitrification Facility with Maximum Achievable Control Technology	110	35	4.2	5	550	170	21
P133	Waste Treatment Pilot Plant	63	20	2.4	4	250	80	9.6
Totals		540	170	20	NA	2.3×10^3	740	88
Minimum INEEL Processing Alternative								
P18	New Analytical Laboratory	59	19	2.2	2	120	37	4.5
P24	Interim Storage of Vitrified Waste	110	35	4.2	3.7	410	130	16
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	78	25	3.0	7	550	170	21
P59A	Calcine Retrieval and Transport	190	60	7.2	5	950	300	36
P111	SBW and Newly-Generated Liquid Waste Treatment with Cesium Ion Exchange to Contact-Handled Transuranic Grout and Low-Level Waste Grout	20	6.3	0.76	3	60	19	2.3
P117A	Calcine Packaging and Loading to Hanford	78	25	3.0	4	310	99	12
P133	Waste Treatment Pilot Plant	63	20	2.4	4	250	80	9.6
Totals		600	190	23	NA	2.6×10^3	840	100

a. LWD = lost workday. The number of workdays, beyond the day of injury or onset of illness the employee was away from work or limited to restricted work activity because of an occupational injury or illness. The LWD rate used to calculate number of lost workdays is 31.6 based on a 5-year historical average for construction workers at INEEL from 1992-1997.

b. TRC = total recordable case. A recordable case includes work-related death, illness, or injury which resulted in loss of consciousness, restriction of work or motion, transfer to another job, or required medical treatment beyond first aid. The TRC rate used to calculate number of total recordable cases is 3.8 based on a 5-year historical average for construction workers at INEEL from 1992-1997.

Table C.3-6. Estimated worker injury impacts during operations activities of new facilities at INEEL by alternative.

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
No Action Alternative								
P1D	No Action Alternative	62	14	2.0	17	1.0×10^3	240	34
P1E	Bin Set 1 Calcine Transfer	18	4.1	0.58	17	300	69	9.8
Totals		80	18	2.6	NA	1.4×10^3	310	44
Continued Current Operations Alternative								
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	150	33	4.7	6	900	200	28
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	76	17	2.4	5	380	86	12
P1B(11)[c]	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	56	13	1.8	14	780	180	25
P1E	Bin Set 1 Calcine Transfer	18	4.0	0.58	1	18	4.1	0.58
P4	Long-Term Storage of Calcine in Bin Sets	3	0.68	0.10	81	240	55	7.8
P18MC	Remote Analytical Laboratory Operations	52	12	1.7	29	1.5×10^3	340	48
Totals		350	80	11	NA	3.8×10^3	860	120
Full Separations Option								
P9A	Full Separations	120	27	3.8	21	2.5×10^3	570	80
P9B	Vitrification Plant	90	20	2.9	18	1.6×10^3	370	52
P9C	Class A Grout Plant	38	8.6	1.2	21	800	180	26
P18	New Analytical Laboratory	100	24	3.4	34	3.6×10^3	800	110
P24	Interim Storage of Vitrified Waste	6.5	1.5	0.21	47	300	69	9.8
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	7	1.6	0.22	20	140	32	4.5
P59A	Calcine Retrieval and Transport	11	2.5	0.36	21	240	54	7.6
P118	Separations Organic Incinerator	8.5	1.9	0.27	21	180	40	5.7
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	17	3.8	0.54	21	360	80	11
P35D	Class A Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	9.5	2.2	0.30	21	200	45	6.4
P133	Waste Treatment Pilot Plant	39	8.8	1.3	27	1.1×10^3	240	34
Totals		450	100	15	NA	1.1×10^4	2.5×10^3	350

Table C.3-6. Estimated worker injury impacts during operations activities of new facilities at INEEL by alternative (continued).

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
			Planning Basis Option					
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	150	33	4.7	6	890	200	28
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	130	30	4.2	21	2.8×10^3	630	89
P59A	Calcine Retrieval and Transport	11	2.5	0.36	21	240	53	7.6
P23A	Full Separations	120	27	3.8	16	1.9×10^3	430	61
P23B	Vitrification Plant	90	20	2.9	15	1.4×10^3	300	43
P23C	Class A Grout Plant	38	8.6	1.2	16	600	140	19
P24	Interim Storage of Vitrified Waste	6.5	1.5	0.21	47	300	6.9	9.8
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	7	1.6	0.22	20	140	32	4.5
P25B	Shipping HLW from INTEC to a Geologic Repository	0	0	0	0	0	0	0
P18	New Analytical Laboratory	100	24	3.4	34	3.6×10^3	800	110
P118	Separations Organic Incinerator	8.5	1.9	0.27	21	180	40	5.7
P35D	Class A Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	9.5	2.2	0.30	21	200	45	6.4
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	17	3.8	0.54	21	360	81	11
P133	Waste Treatment Pilot Plant	39	8.8	1.3	27	1.1×10^3	240	34
Totals		730	170	23	NA	1.4×10^4	3.1×10^3	430
			Transuranic Separations Option					
P18	New Analytical Laboratory	100	24	3.4	34	3.6×10^3	800	110
P27	Class A Grout Disposal in a Low-Activity Waste Disposal Facility	17	3.8	0.54	21	360	81	11
P39A	Packaging and Loading Transuranic Waste at INTEC for Shipment to the Waste Isolation Pilot Plant	6.5	1.5	0.21	19	120	28	4.0
P49A	Transuranic Waste/Class A Separations	84	19	2.7	21	1.8×10^3	400	56
P49C	Class C Grout Plant	40	9.0	1.3	21	840	190	27
P49D	Class C Grout Packaging and Shipping to a Low-Activity Waste Disposal Facility	8.5	1.9	0.27	21	180	40	5.7
P59A	Calcine Retrieval and Transport	11	2.5	0.36	21	240	53	7.6

Table C.3-6. Estimated worker injury impacts during operations activities of new facilities at INEEL by alternative (continued).

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
P118	Separations Organic Incinerator	8.5	1.9	0.27	21	180	40	5.7
P133	Waste Treatment Pilot Plant	39	8.8	1.3	27	1.1×10^3	240	34
Totals		320	72	10	NA	8.3×10^3	1.9×10^3	270
				Hot Isostatic Pressed Waste Option				
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	150	33	4.7	6	890	200	28
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	76	17	2.4	5	380	86	12
P1B(11)[c]	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	56	13	1.8	14	780	180	25
P18	New Analytical Laboratory	100	24	3.4	34	3.6×10^3	800	110
P59A	Calcine Retrieval and Transport	11	2.5	0.36	21	240	53	7.6
P71	Mixing and Isostatic Pressing	78	18	2.5	21	1.6×10^3	370	52
P72	Interim Storage Isostatic Pressed Waste	6.5	1.5	0.21	54	350	79	11
P73A	Packaging and Loading Hot Isostatic Pressed Waste at INTEC for Shipment to a Geologic Repository	6.5	1.5	0.21	20	130	29	4.2
P133	Waste Treatment Pilot Plant	39	8.8	1.3	27	1.1×10^3	240	34
Totals		530	120	17	NA	9.0×10^3	2.0×10^3	290
				Direct Cement Waste Option				
P1A	Calcine SBW including New Waste Calcining Facility Upgrades	150	33	4.7	6	890	200	28
P1B	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	76	17	2.4	5	380	86	12
P1B(11)[c]	Newly-Generated Liquid Waste and Tank Farm Heel Waste Management	56	13	1.8	14	780	180	25
P18	New Analytical Laboratory	100	24	3.4	34	3.6×10^3	800	110
P59A	Calcine Retrieval and Transport	11	2.5	0.36	21	240	53	7.6
P80	Direct Cement Process	140	32	4.5	21	2.9×10^3	660	94
P81	Unseparated Cementitious HLW Interim Storage	6.5	1.5	0.21	54	350	79	11
P83A	Packaging & Loading Cementitious Waste at INTEC for Shipment to a Geologic Repository	11	2.5	0.35	20	220	50	7.0
P133	Waste Treatment Pilot Plant	39	8.8	1.3	27	1.1×10^3	240	34
Totals		590	130	19.0	NA	1.0×10^4	2.3×10^3	330

Table C.3-6. Estimated worker injury impacts during operations activities of new facilities at INEEL by alternative (continued).

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
			Early Vitrification Option					
P1C	Process Equipment Waste Evaporator and Liquid Effluent Treatment and Disposal Facility	28	6.3	0.90	36	1.0×10^3	230	32
P18	New Analytical Laboratory	100	24	3.4	34	3.6×10^3	800	110
P59A	Calcine Retrieval and Transport	11.3	2.5	0.36	21	240	53	7.6
P61	Vitrified HLW Interim Storage	6.5	1.5	0.21	54	350	79	11
P62A	Packaging and Loading of Vitrified HLW at INTEC for Shipment to a Geologic Repository	6.5	1.5	0.21	20	130	29	4.2
P88	Early Vitrification with Maximum Achievable Control Technology	130	29	4.1	21	2.7×10^3	600	87
P90A	Packaging and Loading Vitrified SBW at INTEC for Shipment to the Waste Isolation Pilot Plant	6.5	1.5	0.21	18	120	26	3.7
P133	Waste Treatment Pilot Plant	39	8.8	1.3	27	1.1×10^3	240	34
Totals		330	75	11	NA	8.2×10^3	1.8×10^3	260
			Minimum INEEL Processing Alternative					
P1C	Process Equipment Waste Evaporator and Liquid Effluent Treatment and Disposal Facility	28	6.3	0.90	26	730	160	23
P18	New Analytical Laboratory	100	2.4	3.4	34	3.6×10^3	800	110
P24	Interim Storage of Vitrified Waste	6.5	1.5	0.21	47	300	69	9.8
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	6	1.4	0.19	20	120	27	3.8
P59A	Calcine Retrieval and Transport	11	2.5	0.36	14	160	36	5.0
P111A	SBW and Newly-Generated Liquid Waste Treatment with Cesium Ion Exchange to Contact-Handled Transuranic Grout and Low-Level Waste Grout	33	7.5	1.1	5	170	37	5.3
P111B	SBW and Newly-Generated Liquid Waste Treatment with Cesium Ion Exchange to Contact-Handled Transuranic Grout and Low-Level Waste Grout	21	4.8	0.67	15	300	71	10

Table C.3-6. Estimated worker injury impacts during operations activities of new facilities at INEEL by alternative (continued).

Project	Description	Average number workers/year	LWD[a] per year	TRC[b] per year	Processing time (years)	Total workers	Total LWD	Total TRC
P112A	Packaging and Loading Contact-Handled Transuranic Waste for Shipment to WIPP	18	4.1	0.58	15	270	61	8.6
P117A	Packaging and Loading Calcine to Hanford	48	11	1.5	14	670	150	22
P133	Waste Treatment Pilot Plant	39	8.8	1.3	27	1.1×10^3	240	34
Totals		320	71	10	NA	7.4×10^3	1.7×10^3	240

a. LWD = Lost Workdays. The number of workdays, beyond the day of injury or onset of illness the employee was away from work or limited to restricted work activity because of an occupational injury or illness. LWD rate used to calculate lost workdays is 22.6 based on 15-year historical average at INEEL from 1982- 1997.

b. TRC = Total Recordable Case. A recordable case includes work-related death, illness, or injury which resulted in loss of consciousness, restriction of work or motion, transfer to another job, or required medical treatment beyond first aid. The TRC rate used to calculate total recordable cases is 3.2 based on 15-year historical average at INEEL from 1982-1997.

c. Project data from project data sheets are divided into two phases.

Table C.3-8. Estimated radiological impacts and occupational worker data for existing facilities by project.

	Radiological impacts data					Worker safety data	
Project	Radiological workers per year	Annual dose per worker (millirem)	Annual collective dose (person-rem)	Number of years	Total collective dose (person-rem)	Nonradiological workers per year	Total employment (worker years)
Tank Farm							
Clean Closure	280	1.0×10^{3}	280	27	7.6×10^{3}	280	7.6×10^{3}
Performance-Based Closure	11	1.1×10^{3}	12	22	270	16	360
Closure to Landfill Standards	12	1.2×10^{3}	14	16	220	12	190
Performance-Based Closure with Class A Fill	22	2.1×10^{3}	16	40	300	27	420
Performance-Based Closure with Class C Fill	23	5.9×10^{3}[a]	28	40	490	28	420
Total	350	NA	370	NA	9.1×10^{3}	390	9.1×10^{3}
Tank Farm related facilities							
CPP-619	0.01	250	2.5×10^{-3}	6	0.02	0.02	0.13
CPP-628	0.26	250	0.07	6	0.39	0.38	2.3
CPP-638	0.09	250	0.02	2	0.05	0.15	0.3
CPP-712	0.02	250	5.0×10^{-3}	6	0.03	0.03	0.18
CPP-717	0.82	250	0.21	6	1.2	1.20	7.2
CPP-737	0.11	250	0.03	6	0.17	0.18	1.1
CPP-738	0.05	250	0.01	6	0.08	0.09	0.52
CPP-739	0.04	250	0.01	6	0.06	0.06	0.35
CPP-743	0.09	250	0.02	6	0.14	0.14	0.82
CPP-641	0.34	250	0.09	2	0.17	0.56	1.1
Total	1.8	NA	0.5	NA	2.3	2.8	14
Bin sets							
Clean Closure	58	600	35	27	940	58	1.6×10^{3}
Performance-Based Closure	49	870	43	20	850	55	1.1×10^{3}
Closure to Landfill Standards	27	700	20	21	400	27	570
Performance-Based Closure with Class A Fill	92	2.1×10^{3}	60	34	960	98	1.3×10^{3}
Performance-Based Closure with Class C Fill	98	2.9×10^{3}	75	34	1.2×10^{3}	104	1.3×10^{3}
Total	420	NA	280	NA	4.7×10^{3}	430	6.2×10^{3}

Table C.3-8. Estimated radiological impacts and occupational worker data for existing facilities by project (continued).

Project	Radiological impacts data					Worker safety data	
	Radiological workers per year	Annual dose per worker (millirem)	Annual collective dose (person-rem)	Number of years	Total collective dose (person-rem)	Nonradiological workers per year	Total employment (worker years)
Bin sets related facilities							
CPP-639	0.04	250	0.01	6	0.06	0.07	0.4
CPP-646	0.01	250	2.5×10^{-3}	6	0.02	0.01	0.08
CPP-647	0.01	250	2.5×10^{-3}	6	0.02	0.01	0.08
CPP-658	0.01	250	2.5×10^{-3}	6	0.02	0.02	0.09
CPP-671	0.08	250	0.02	6	0.12	0.13	0.76
CPP-673	0.02	250	5.0×10^{-3}	6	0.03	0.04	0.22
Total	0.17	NA	0.04	NA	0.26	0.27	1.6
Process Equipment Waste Evaporator and related facilities							
CPP-604	38	500	19	6	110	38	230
CPP-605	0.7	250	0.18	6	1.0	1.2	7.0
CPP-649	1	250	0.25	6	1.5	1.6	9.8
CPP-708	6.0	250	1.5	6	9.0	8.6	52
CPP-756	0.75	250	0.19	6	1.1	1.2	7.3
CPP-1618	0.9	250	0.23	6	1.4	1.4	8.6
Total	48	NA	21	NA	128	52	312
Fuel Processing Building and related facilities – Closure to Landfill Standards							
CPP-601	10	250	2.5	10	25	16	160
CPP-627	5.1	250	1.3	10	13	8	80
CPP-640	4.8	250	1.2	10	12	8	80
Total	20	NA	5	NA	50	30	320
Fuel Processing Building and related facilities – Performance-Based Closure							
CPP-601	13	250	3.3	10	30	20	200
CPP-627	6	250	1.5	10	15	10	100
CPP-640	6	250	1.5	10	15	10	100
Total	25	NA	6.3	NA	60	40	400
FAST and related facilities							
CPP-666	34	250	8.4	6	50	50	320
CPP-767	0	0	0	0	0	0	0
Total	34	NA	8.4	NA	50	50	320

Table C.3-8. Estimated radiological impacts and occupational worker data for existing facilities by project (continued).

Project	Radiological impacts data					Worker safety data	
	Radiological workers per year	Annual dose per worker (millirem)	Annual collective dose (person-rem)	Number of years	Total collective dose (person-rem)	Nonradiological workers per year	Total employment (worker years)
Other HLW facilities							
CPP-659							
Performance-Based Closure	35	250	8.8	5	44	47	240
Closure to Landfill Standards	32	250	8	5	40	44	220
CPP-684	4.2	250	1.0	5	5.3	6.9	35
Total	70	NA	18	NA	90	98	490

a. Annual dose from grout fill operations (4,500 mrem per year) accounts for majority of the dose. Administrative controls would prevent workers from actually receiving this level of radiation dose.